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Dixie National Forest Plan Modification

Monitoring Plan Guide

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Dixie National Forest
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Table of Contents

List of Tables

Introduction

In 2017 the Dixie National Forest modified its Land and Resource Management Plan (1986, Forest Plan) Monitoring and Evaluation Program (Forest Plan, pp. V-2 through V-12) to bring it into compliance with 2012 Planning Rule. The monitoring guide document is intended to serve as a guide for implementing the Monitoring Plan of the Dixie National Forest Land and Resource Management Plan for the fiscal years of 2017 and 2018.

Dixie National Forest Plan Monitoring Program

For the fiscal years 2017 and 2018 the Dixie National Forest will be using the methods described in Table 1 for monitoring program activities on the Dixie National Forest. Due to the possibility of changing funding and circumstances which may not allow for monitoring methods to be exactly as described in Table 1, this guide will be used as a "guide" for monitoring methods and not an absolute rigid adherence to methods when they are no longer practicable or viable.

Table 1 Monitoring Questions, Indicators, Methods, and Responsible Persons

Program	Activity	Monitoring Question	Monitoring Indicator	Methods	Person(s) Responsible
Recreation	Developed Sites; Actual Use	Are developed recreation sites meeting Forest Plan standards for use, and are visitors satisfied?	Developed site use and visitor satisfaction.	Annually collect use data from concessionaire. Evaluate satisfaction using the National Visitor Use Monitoring data every five years.	Recreation
	Developed Sites; Condition	Are developed recreation sites meeting Forest Plan standards for condition?	Developed site condition.	Annually condition surveys are performed on 20% of developed sites. All sites are completed within a 5 year period.	Recreation
	Dispersed Sites; Actual Use	Are dispersed recreation sites meeting Forest Plan standards	Dispersed site use and visitor satisfaction.	Annually use road/trail counters to collect use data. Evaluate satisfaction using the National Visitor	Recreation

Program	Activity	Monitoring Question	Monitoring Indicator	Methods	Person(s) Responsible
		for use, and are visitors satisfied?		Use Monitoring data every five years.	
	Dispersed Sites; Condition	Are dispersed recreation sites meeting Forest Plan standards for condition, and are visitors satisfied?	Dispersed site condition.	Collect campsite condition data every 5 years and compare form condition trends.	Recreation
	Trail Condition	Are trails meeting Forest Plan standards for use and condition, and are visitors satisfied?	Trail use, and visitor satisfaction; miles of motorized trail managed to standard; miles of non-motorized trail managed to standard.	Annually collect trail use data using trail counters. Annually collect trail condition data on trails assigned by the Washington Office (Random 2% survey). Evaluate satisfaction using the National Visitor Use Monitoring data every five years.	Recreation
Wilderness	Wilderness Character	Is wilderness character being preserved on wilderness areas across the Forest?	Incursions of developed facilities, access, services and perception of safety. Wilderness campsite condition.	Annually collect trail use data using trail counters. Collect campsite condition data every 5 years and compare form condition trends.	Recreation

Program	Activity	Monitoring Question	Monitoring Indicator	Methods	Person(s) Responsible
			Motorized/mechanized incursions. Managed wildland/prescribed fire usage.	Report the number of motorized/mechanized incursions. Report the number of wildfire starts and report the number of managed and prescribed fires.	
Cultural Resources	Identify, protect, interpret and manage the significant cultural resources on Forest lands.	Are heritage resources being protected and are mitigation measures sufficient to prevent damage to heritage resources from federal actions, looting, environmental disturbance, and other actions?	Number of historic properties recorded and evaluated for the National Register. Number of eligible historic properties being impacted by federal actions, looting, environmental disturbance, and other actions.	Report the number of historic properties recorded and evaluated for the National Register of Historic Places during inventory for proposed undertakings. Revisit Historic Properties after project implementation and other actions on at least 1projects/activities per year to document effectiveness of protection and mitigation measures.	Forest Archeologis t or staff
Fish and Wildlife	Wildlife Habitat Diversity	Is the diversity of wildlife habitat being maintained by managing Vegetative Structural	Diversity and stability of forest vegetational structural stages (VSS) at the planning area and landscape level.	Collect VSS data in proposed planning areas and evaluate against desired VSS distributions at the project planning	Wildlife Program Manager

Program	Activity	Monitoring Question	Monitoring Indicator	Methods	Person(s) Responsible
		Stage (VSS) distribution across the planning area?		area level. Use of Utah Division of Wildlife Range Trend Data may be used if available and applicable in combination with VSS data. In addition, old growth evaluation data, visual reconnaissance and GAP data may be used to if applicable.	
	Modification of Ecosystem	Are forest management activities and/or natural events affecting the structure and function of upland and riparian ecosystems?	Structure (VSS) and function of forest and riparian ecosystems. Upland and riparian vegetation diversity, condition, trend, structure and ground cover.	Monitor ground cover using. Nested Frequency, Ocular Macroplot, Riparian Level III (Greenline), and/or Photopoint methodologies. These monitoring studies are on a 5-10 year rotational visit basis and will be reported annually, by district, after completion.	Wildlife biologist and foresters collecting VSS data. Vegetation monitoring data collected by forest botanist, fish

Program	Activity	Monitoring Question	Monitoring Indicator	Methods	Person(s) Responsible
					biologist or hydrologist.
	Big Game Habitat Condition	Is big game habitat maintained to meet Forest Plan desired conditions?	Big game habitat condition and/or VSS Distribution across the landscape and within projects.	Collect VSS habitat data and evaluate against Forest Plan guidance under desired conditions for VSS distribution. Use of Utah Division of Wildlife Range Trend Data may be used if available and applicable in combination with VSS data. In addition, old growth evaluation data, visual reconnaissance and GAP data may be used to if applicable.	Wildlife biologist and forester collecting VSS data.
	Fish Quantity and Quality of	Are forest management activities and natural events affecting the ecological conditions indicated by the status of focal species[1]?	Occupied habitat and population structure of focal species.	Qualitative and quantitative electrofishing surveys in streams and gill net surveys in lakes. Fish bearing streams are visited on a 5-7 year interval; therefore, approximately	Forest Fish Biologist in coordination with Utah Division of Wildlife Resources

[1] Bonneville Cutthroat trout (BCT), Colorado River Cutthroat Trout (CRCT), Southern Leatherside, Chub, Virgin spinedace and Nonnative trout species.

Program	Activity	Monitoring Question	Monitoring Indicator	Methods	Person(s) Responsible
	Aquatic Habitats	Are management activities maintaining and improving the ability of lakes and streams on the Forest to maintain self-sustaining cold water fisheries?	Riparian vegetation diversity, condition, trend, structure and ground cover.	20-40% of the Forest's fish bearing streams will be sampled in 2017-2018. At least 1 lake per year will be sampled. Nested Frequency, Ocular Macroplot, Riparian Level III (Greenline), and/or Photopoint methodologies. These monitoring studies are on a 5-10 year rotational visit basis and will be reported annually, by district, after completion.	Regional personnel. Forest Botanist
		Are forest management activities and/or natural events maintaining aquatic habitat to meet Forest Plan desired conditions and objectives or improving habitat to move toward those conditions and objectives?	Stream channel condition, morphology, bank stability and substrate composition.	Multiple Indicator Monitoring. Existing sites will are on a 3-5 year rotational visit basis and will be reported annually, by district, after completion.	Forest Fish Biologist and Zone Hydrologists
			Compliance with State water quality sediment, turbidity and temperature standards and maintenance of beneficial uses.	Cooperative grab sampling (10 Samples per year at 3 sites) for analyses according to state	Zone Hydrologists and Forest

Program	Activity	Monitoring Question	Monitoring Indicator	Methods	Person(s) Responsible
				protocols. 15 min to 30 min continuous temp logging on fish bearing streams. At least 10 per year.	Fish Biologist
			Function and condition of lentic riparian areas.	For all types of activities where wetlands are within the project area at least 2 partial GDE level I surveys annually.	Zone Hydrologists
	Threatened, Endangered and Sensitive Plant Species	Are TES plant habitats being protected from forest plan implementation activities and maintaining sufficient numbers and distribution to maintain viable populations across the Forest?	TES species have suitable habitat to sustain population numbers to maintain viability.	[i]TES Plant Studies, Nested Frequency, Ocular Macroplot and/or Photopoint methodologies. Quantitative data on number and trend of representative TES plants within a defined plot or transect area will be collected and reported every two years.	Forest Botanist
	Indicator and Special Status Species	Are forest management activities and natural events affecting the	Habitat conditions retained across the planning area in sufficient numbers and distribution to maintain species viability.	Review VSS distribution data Review wildlife specialist reports, biological evaluation/assessment determinations made on	Wildlife program manager.

Program	Activity	Monitoring Question	Monitoring Indicator	Methods	Person(s) Responsible
		ecological conditions indicated by the status of focal species[2]?		current year projects for impacts to species viability. Survey for TES and MIS status species are conducted across the DNF by the Forest level monitoring crew & additional monitoring is conducted by district biologist. Using management indicator species (MIS) as indicators of ecological conditions across the Forest. MIS are monitored at the project level. Effects analysis are conducted at the project level per individual species.	

[2] Mule deer, rocky mountain elk, wild turkey, Northern goshawk, Northern flicker, and sage-grouse, pygmy rabbit, spotted bat, Townsends Wester big-eared bat, bald eagle, sage-grouse, peregrine falcon, Flammulated owl, and three-toed woodpecker.

Program	Activity	Monitoring Question	Monitoring Indicator	Methods	Person(s) Responsible
	Threatened, Endangered and Sensitive Animal Species	Are TES animal habitats being protected from forest plan implementation activities and maintaining sufficient numbers and distribution to maintain viable populations across the Forest?	TES species have suitable habitat to sustain population numbers to maintain viability.	Fish - Qualitative and quantitative electrofishing surveys in streams and gill net surveys in lakes. Native cutthroat streams are visited on a 5-7 year interval as determined by the UDWR. Streams in the Virgin River and Escalante River drainages are scheduled for 2018 sampling. Virgin spinedace and Southern leatherside streams are sampled on a 5-year rotation in coordination with UDWR. At least one stream for these species will be sampled in 2017-2018. Amphibians – Visual Encounter Surveys of known breeding areas at least once annually in 2017-2018.	Forest Fish Biologist in coordination with Utah Division of Wildlife Resources Regional personnel. Forest Fish Biologist in coordination with Utah Division of Wildlife Resources Regional personnel.

Program	Activity	Monitoring Question	Monitoring Indicator	Methods	Person(s) Responsible
	Snag Management	Is the spatial arrangement of snags in condition to meet needs of cavity nesters?	Snag species, density, size, height and condition.	Monitor snag species, size (DBH), density of shags distribution, height and condition during the project level analysis phase and/or at the watershed scale for planning purposes. Common Stand Exam data, which will observe and record stand health, will be collected for each proposed project involving timber stands.	Wildlife biologists and foresters collecting data.
Goshawk	Goshawk territory occupancy at the forest level	Are known goshawk territories on NFS lands remaining occupied?	Goshawk territory occupancy.	Annual nest territory occupancy monitoring across all Ranger Districts.	District wildlife biologist and forest wildlife program manager.

Program	Activity	Monitoring Question	Monitoring Indicator	Methods	Person(s) Responsible
	Goshawk territory occupancy following vegetative management treatments	Are goshawk territories remaining occupied following vegetation management?	Goshawk territory occupancy.	Annual nest territory occupancy monitoring across all Ranger Districts	District wildlife biologist and forest wildlife program manager.
	Dispersion & patch size of mature/old forest groups	Is mature and old forest habitat connectivity being adequately maintained?	Percent and distribution of mature and old forest cover.	Annual mapping of mature/old forest habitat across the Forest in project areas by Ranger District. Common Stand Exam data, which will observe and record stand health, will be collected for each proposed project involving timber stands. Individual project monitoring is conducted on a project and district level. Forest plan requirements for VSS distribution, maintaining groups/clumps, and adhering to Northern goshawk standards is	Wildlife program manager

Program	Activity	Monitoring Question	Monitoring Indicator	Methods	Person(s) Responsible
				required of every vegetation project.	
	Down log & woody debris amounts/sizes within a 10 acre treatment block	Is downed wood being maintained in sufficient amount, size, and location?	Quantity of downed logs and woody debris.	Transects (such as Browns) monitoring down logs and down wood debris.	Wildlife biologists and foresters, and/or fire personnel.
	Ungulate grazing practices in identified at-risk locations	Are appropriate adjustments to grazing practices being made where grazing is contributing to at-risk conditions?	Ungulate grazing practices in at-risk locations.	Identify at-risk locations by Ranger District and monitor use by ungulates and evaluate against desired VSS distributions in Forest Plan. Monitoring of grazing allotments occurs on a rotational schedule across the DNF. Long-term range trend transects are established and monitored on a 5 year rotation. In addition, UDWR has established long term monitoring transects across the DNF in key habitat areas. These	Forest Botanist & Wildlife Program Manager.

Program	Activity	Monitoring Question	Monitoring Indicator	Methods	Person(s) Responsible
				transects are monitored on a 5 year rotation.	
Range	Permitted Animal Unit Months (AUMs)	Are goods and services being provided in accordance with Forest Plan goals and objectives?	Level of permitted livestock grazing.	INFRA Query	Range Program Manager
	Range Condition and Trend	Are desired conditions for rangeland plant communities being met in regards to species composition, trend and ground cover?	Range condition, trend and ground cover.	Nested Frequency, Ocular Macroplot, Riparian Level III (Greenline), and/or Photopoint methodologies. These monitoring studies are on a 5-10 year rotational visit basis and will be reported annually, by district, after completion.	Forest Botanist
	Invasive Species	What is the extent of the change of ecological conditions due to invasive species?	Estimated acres infested with invasive plants and noxious weeds.	TESP/IS Database Query	Range Program Manager
Timber	Assure that vegetation manipulation will not favor an increase in forest pests	Are vegetation conditions stable or moving toward Forest Plan desired conditions?	Extent of insect and disease infestations.	[ii]Common Stand Exam data, which will observe and record stand health, will be collected for each proposed project involving timber stands. Insect and disease flights will be conducted annually by	Timber Program Mgr / Forest Silviculturist through data gathered at the District

Program	Activity	Monitoring Question	Monitoring Indicator	Methods	Person(s) Responsible
	(insects, diseases, etc.)			FHP and an assessment report will be completed biannually.	level by local personnel or by contract.
Water	Water Quality	Are beneficial uses, identified by the state of Utah, being maintained for all water bodies?	Impairment or degradation of water quality. Number of impaired or degraded water bodies.	10 Samples per year at 3 sites cooperative grab sampling for analytes according to state protocols. Annual UDEQ 303(D) List Report.	Zone Hydrologists
	Changes in Stream Channels and Riparian Areas Due to Management	Are forest management activities affecting stream channels and riparian ecosystems?	Riparian ecosystem vegetation diversity, condition, trend, structure and ground cover. Riparian species occupied habitat and population structure. Stream channel condition, morphology, bank stability and substrate composition. Riparian species occupied habitat and population structure.	Riparian Level III (Greenline) methodology monitoring for vegetative successional status and woody species regeneration. These monitoring studies are on a 5-10 year rotational visit basis and will be reported annually, by district, after completion. For non-range related activities Channel Cross Section Analysis and Zig Zag Pebble Count methods for channel condition,	Forest Botanist for Vegetative Measures. Zone Hydrologists for Stream Channel measures.

Program	Activity	Monitoring Question	Monitoring Indicator	Methods	Person(s) Responsible
				morphology, and substrate composition. At least 2 activities monitored annually. For range related activities MIM protocol for streambank stability, channel condition, and substrate composition. At least two pastures monitored annually. For all types of activities where wetlands are within the project area at least 2 partial GDE level I surveys annually.	
	Best Management Practices (BMP) effectiveness and compliance on land disturbing projects	Are appropriate BMPs being followed with forest management activities and are they meeting their intended effectiveness with respect to impacts to riparian ecosystems?	BMP compliance and effectiveness	7 Activities Annually Using The National BMP Monitoring Protocol.	Forest Hydrologist/ Soil &Water Program Manager

Program	Activity	Monitoring Question	Monitoring Indicator	Methods	Person(s) Responsible
Soils	Accelerated Soil Loss	Are forest management activities impairing soil productivity of the land?	Changes in soil properties (physical, chemical, and/or biological) and ground cover that result in the loss of the inherent ecological capacity or hydrologic function of the soil resource.	Soil erosion, compaction, displacement, puddling, and severely burned measurements using definitions and thresholds defined in FSM 2500 and forest service soil disturbance monitoring protocol. Monitoring Oi and Oe-Oa for minimum of 4 and 2 mm, respectively, using 100 ft transects collected every 1 foot along the transect. At least 2 activities monitored annually.	Forest Hydrologist/ Soil and Water Program Manager
Facilities	Transportation System Management	Is adequate road access and maintenance being provided?	Miles of classified road open for public use. Number and condition of deficient bridges.	Report on miles of Open Road every 2 years. 3% Random Sample (from WO) of open roads condition survey per year. Condition survey on 50% of bridges per year.	GIS/Engineering
	Road Maintenance	Are open roads maintained to standard?	Miles of road maintained to standard.	Report on miles of road maintained to standard. 3% Random Sample (from	Engineering

Program	Activity	Monitoring Question	Monitoring Indicator	Methods	Person(s) Responsible
				WO) of open roads condition survey per year.	
	Water Systems	Do potable and non-potable water systems meet Federal, State, and Local requirements?	Water quality monitoring results and condition surveys.	Condition survey on 20% per year.	Engineering
	Dams and Water Impoundments	Do dams on Forest Service lands meet State and Local safety requirements?	Critical safety items identified during dam inspections.	Condition of all High Hazard Dams surveyed annually. Condition survey on 20% of all other dams annually.	Engineering
Protection	Fuel Treatment	Are fuel treatment projects reducing risk to property, human health and safety, and reducing the potential for unwanted fire effects through reduction of total fuel loading to manageable levels?	Percent of projects where post-treatment total fuel load is reduced from pre-treatment levels.	Number of vegetation manipulation projects and count of affected acres by project that: maintain, reduce or increase fuel loads from pretreatment levels as identified in Common Stand Exam data, Fire Effects Monitoring Crew data, or other monitoring data compared to desired acres where fuels are maintained or reduced as identified in project decision.	Fire Program Mgr. / Fuels Planner

Program	Activity	Monitoring Question	Monitoring Indicator	Methods	Person(s) Responsible
	Fire Management	Are forest vegetation conditions trending towards safe and efficient fire response and restoring fire as a disturbance agent consistent with management area emphasis and historic fire return intervals?	Percent of fires suppressed during initial attack where that is the chosen strategy. Percent of natural ignition acres with resource benefit.	Number of fires that escape initial attack compared to number of fires suppressed for protection of values at risk. (full suppression fires) Number of acres affected by fires managed for resource objectives (fires other than full suppression) compared to total number of acres burned by natural ignitions (lightning fires).	Fire Program Mgr. / Fire Planner
	Insect & Disease	Are forest vegetation conditions stable or moving toward Forest Plan desired conditions?	Extent of insect and disease infestations.	[ii] Common Stand Exam data, which will observe and record stand health, will be collected for each proposed project involving timber stands. Insect and disease flights will be conducted annually by FHP and an assessment report will be completed biannually.	Timber Program Mgr / Forest Silviculturist through data gathered at the District level by local personnel or by contract.

Program	Activity	Monitoring Question	Monitoring Indicator	Methods	Person(s) Responsible
Education	Public Outreach	Education and information: Are we delivering key education/enforcement messages to forest employees and users? (Key focus areas are: OHV use, recreation user ethics, fire's role/hazardous fuels, noxious weeds, watershed health.)	Number of key messages.	Annually generate a report on number of key messages given from the NICE database (can be the number of messages and/or number of people that received the messages)	Public Staff Officer

[i] TES plant habitats are protected from forest plan implementation monitoring on a project-level basis through the on-going required Biological Evaluation and Assessment process during the NEPA project phase. Sufficient numbers and distribution to maintain viability will be addressed by using the monitoring methods listed in the table. Representative TES plant study sites will be chosen for TES plant species that are known to occur on the Dixie National Forest. TES plants are grouped by similar geologic substrates and distributional patterns to link plants with similar habitats and distributions together. This allows for an assessment of similar habitats using a surrogate plant species for others that are logistically unfeasible to collect data on. Distributional TES plant data may be assessed by looking at the number of Nested Frequency plots a TES plant occurs on (if available), or by tracking the number of occurrences of TES plants encountered during the course of regular plant monitoring work.

[ii] These types of monitoring of forest health are done for such insects and diseases as Mountain Pine Beetle, Spruce Beetle, and mistletoe to name a few. This information is used to compare the current forest health conditions to those desired in the Forest Plan. A silvicultural prescription is then written, if needed, to help maintain or improve forest health. "Management direction for the Forest includes an Integrated Pest Management (IPM) program in which all aspects of a pest-host system are studied and weighed to provide the resource manager with information for decision making. Current pest management practices include stand hazard rating [for mistletoe as well as Mountain Pine Beetle] to identify high-risk stands, monitoring insect and disease levels, and control measures such as harvest and thinning to reduce the potential for outbreaks." (Dixie NF Land and Resource Management Plan pg II-57).